
Module configuration

This document contains information about the following modules:

- NT5D21 Core/Network Module
- NT5K11 EEPE Module
- NT6D39 CPU/Network Module
- NT6D60 Core Module
- NT8D11 Common/Peripheral Equipment (CE/PE) Module
- NT8D13 Peripheral Equipment (PE) Module
- NT8D34 CPU Module
- NT8D35 Network Module
- NT8D36 InterGroup Module
- NT8D37 Intelligent Peripheral Equipment (IPE) Module
- NT8D47 Remote Peripheral Equipment (RPE) Module
- NT9D11 Core/Network Module

Note: For information on modules that house equipment for specific applications, such as Meridian Mail and Meridian Link, see the document for that application.

Each type of module is available in AC-powered and DC-powered versions (except for the NT5K11 EEPE Module, which is available in DC powered versions only).

AC-powered modules generally require a module power distribution unit (MPDU) to provide circuit breakers for the power supplies. DC-powered modules do not require an MPDU because a switch on each power supply performs the same function as the MPDU circuit breakers.

The figures in this section show a typical configuration for each module. (DC power supplies are shown in these examples.)

NT5K11 Enhanced Existing Peripheral Equipment module

The NT5K11 Enhanced Existing Peripheral Equipment module is available in international markets only.

The NT5K11 Enhanced Existing Peripheral Equipment (EEPE) module is a DC powered module equipped with an NT5K12 Enhanced Peripheral Equipment (EPEPS) Power Supply. The module supports sixteen peripheral equipment line/trunk cards.

Connections for two NT5K10 Dual Loop (DLB) Buffers and two NT5K09 Quad Density DIGITONE (QDTR) Receivers are at the rear of the module. Each set of DLBs and QDTRs support a section of eight line/trunk cards.

The capacity of the EEPE module is 256 Integrated Voice and Data (IVD) or analog lines. A typical configuration of the module, however, includes a combination of line and trunk cards which provide about 196 lines with the appropriate trunks. The number required per system depends on the system size.

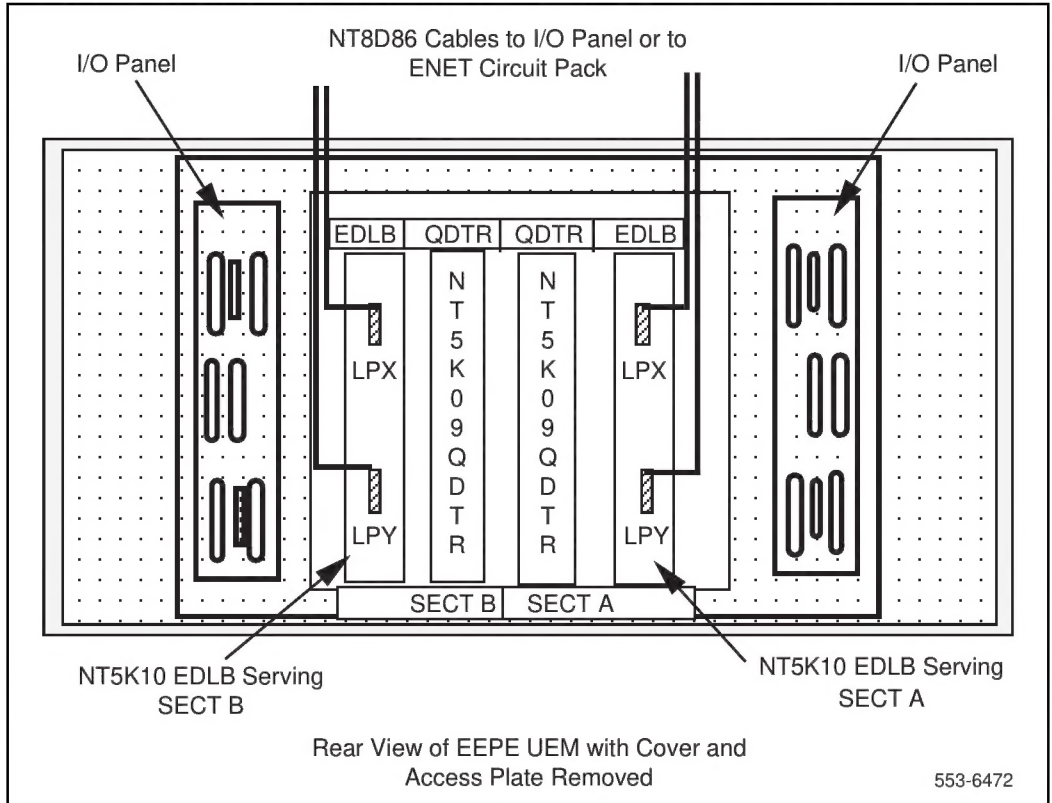
Note: The EEPE Module does not support IPE cards. The IPE cards are housed in an NT8D11 CE/PE Module or an NT8D37 IPE Module.

The EEPE Module contains 18 card slots at the front of the cabinet and 4 at the rear of the cabinet.

The rear card slots are divided into sections A and B, each section having two card slots (see [Figure 1](#)):

- slot 1: section A and B: NT5K10 Dual Loop Buffer
- slot 2: section A and B: NT5K09 Quad Density Digitone Receiver

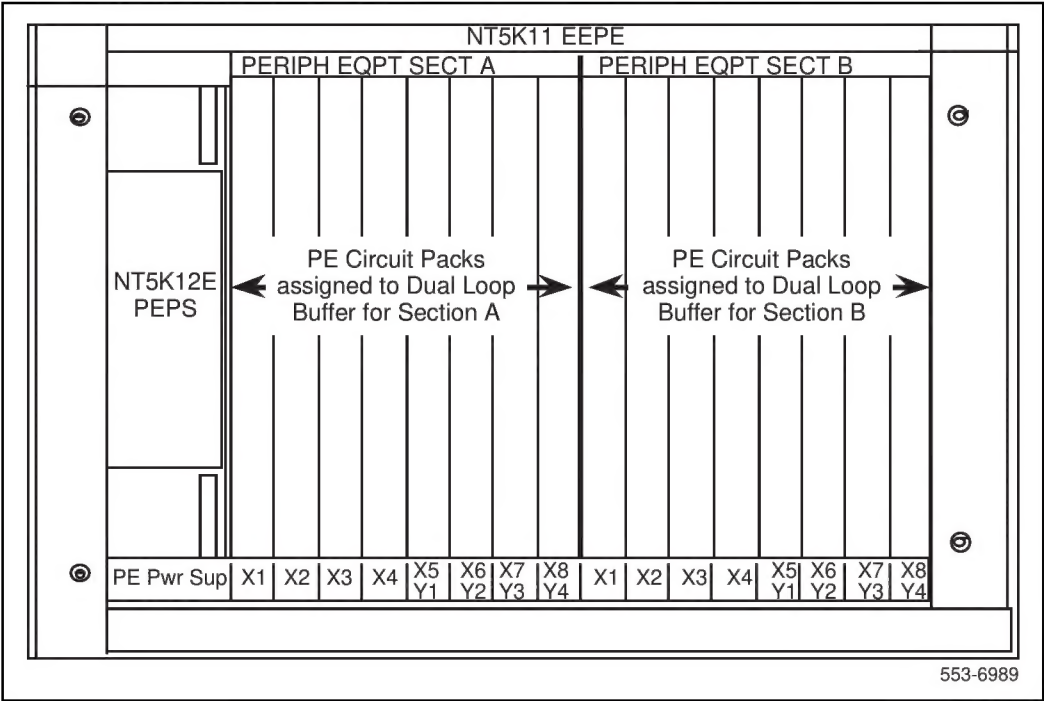
Figure 1
EEPE rear card slot assignment



- The front card slots (see [Figure 2](#)):
- slot 1 and 2: NT5K12 Enhanced Peripheral Equipment Power Supply
 - slot 3–18:

SL-1 Line Cards
 500-2500 Line Cards
 Analog Trunk Cards

Figure 2
EEPE front card slot assignment



NT5D21 Core/Network Module

This module is used in options 51C, 61C, and 81C with X11 release 21 or higher:

- Option 51C, a single CPU, half-network, requires one Core/Network Module.
- Options 61C and 81C, a dual CPU, full-group 61C system and up to five-group 81C system, requires two Core/Network Modules.

The Core/Network Module supports up to 16 network loops. There are 12 card slots for the network interface cards and 7 slots for the CPU, memory, and disk drive equipment listed below (see [Figure 3](#)):

In the section labeled NET:

- slots 0–7: NT8D04 Superloop Network Card
NT8D17 Conference/Tone and Digit Switch (TDS) Card
QPC414 Network Card
Primary rate interface/digital trunk interface (PRI/DTI) card (slots 2–7 only)
Serial data interface (SDI) card
D-channel handler interface (DCHI) card (slots 0–7)
Multi-purpose serial data link (MSDL) card
Multi-purpose ISDN signaling processor (MISP) card
- slot 8: QPC412 InterGroup Switch for 81C and a spare slot for 51C and 61C. No card should be inserted in slot 8 if an NT5D30AA Dual InterGroup Switch (DIGS) card is installed in slot 9.
- slot 9: NT5D30AA Dual InterGroup Switch (DIGS) card (if the DIGS card is installed in slot 9, then no card should be inserted in slot 8) or QPC412 InterGroup Switch for 81C or QPC471 Clock Controller for options 51C and 61C, if required.
- slot 10: QPC43 Peripheral Signaling Card (minimum vintage R)
- slot 11: QPC441 3-Port Extender (3PE) Card (minimum vintage F)

In the section labeled Core:

- slot 12: NT6D65 Core to Network Interface (CNI) Card

- slot 13: NT6D65 Core to Network Interface (CNI) Card for 81C and a spare slot for options 51C and 61C
- slot 14: NT6D65 Core to Network Interface (CNI) Card for 81C and a spare slot for options 51C and 61C
- slots 15/16: NT6D66 Call Processor Card
 NT9D19 Call Processor Card; see notes 1 and 2 below.
 NT5D10 Call Processor Card; see notes 1 and 2 below.
- slots 17-19: NT5D61 Input/Output Disk Unit with CD-ROM (IODU/C) or NT5D20 IOP/CMDU

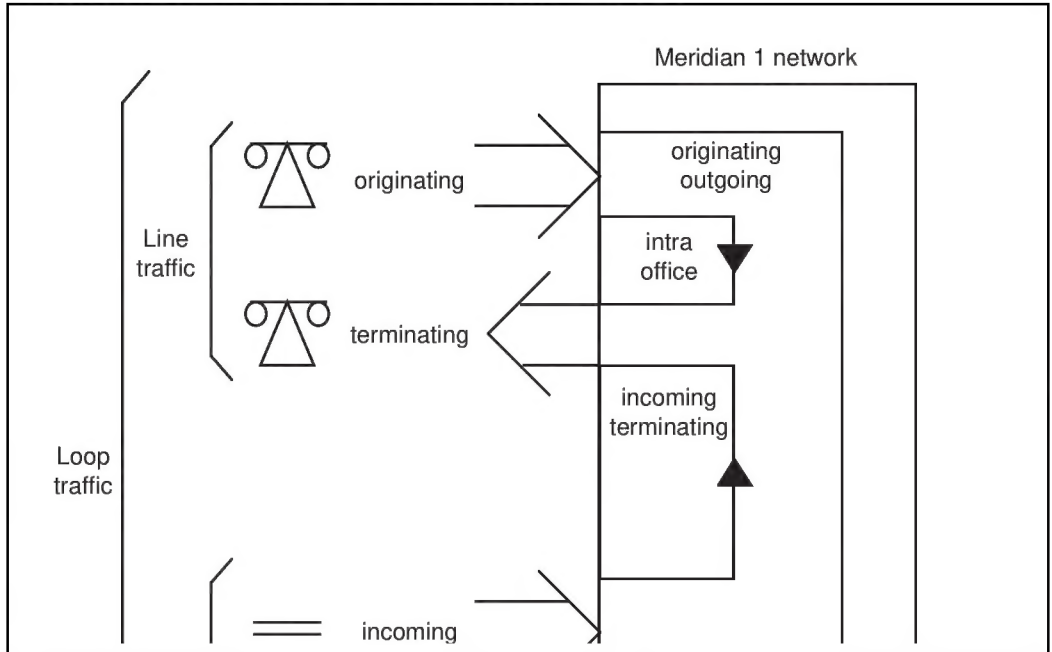
OR

- slots 17-18: NT6D63 Input/Output Processor (IOP)
- slot 19: NT6D64 Core Multi Drive Unit (CMDU)
- In addition:
 NT8D41 SDI paddle boards can occupy slots 7 and 8 on the rear of the backplane.

Note 1: Use the 48 MB (or higher) version of the NT9D19 Call Processor Card or any version of the NT5D10 Call Processor card, to run X11 Release 23 software on system options 51C or 61C.

Note 2: Use the 64 MB (or higher) version NT9D19 Call Processor Card or any version of the NT5D10 Call Processor card to run X11 Release 23 software on system option 81C.

Figure 3
NT5D21 Core/Network Module configured as option 81C



NT6D39 CPU/Network Module

This module is used in options 51 and 61:

- Option 51, a single-CPU, half-network group system, requires one CPU/Network Module.
- Option 61, a dual-CPU, full-network group system, requires two CPU/Network Modules (one sits on top of the other).

The CPU/Network Module supports up to 16 network loops. There are ten card slots for the network interface cards and eight slots for the CPU, memory, and disk drive equipment listed below (see [Figure 4](#)):

In the section labeled NET:

- slots 1–8: NT8D04 Superloop Network Card
 NT8D17 Conference/Tone and Digit Switch (TDS) Card
 QPC414 Network Card
 Primary rate interface/digital trunk interface (PRI/DTI)
 card (slots 3–7 only)
 Serial data interface (SDI) card
 D-channel handler interface (DCHI) card (slots 1–9)
 Multi-purpose serial data link (MSDL) card
 Multi-purpose ISDN signaling processor (MISP) card

Note: The BTUs between slots 1 and 2 and between slots 2 and 3 interfere with a PRI/DTI card in either of those positions.

- slot 9: Clock controller card
 SDI-type card
- slot 10: QPC43 Peripheral Signaling Card

In the section labeled CPU/MEM:

- slot 11: QPC441 3-Port Extender (3PE) Card
- slot 12: QPC742 Floppy Disk Interface (FDI) Card
 QPC584 Mass Storage Interface (MSI) Card
 (Releases 15–17)
 QPC584 MSI Card minimum vintage L
 (Release 18 or later)
 NT9D34 Enhanced Mass Storage Interface (EMSI) Card

- slot 13: SDI card (in option 61 only, for parallel reload only)
DCHI card
- slot 14: QPC579 CPU Function Card
- slot 15: QPC580 CPU Interface Card
- slot 16: Changeover and memory arbitrator (CMA) card
 - QPC581 with Release 15–17
 - NTND10 required with Release 18 and later (can be used with Release 15–17)
- slot 17: Memory card
 - QPC583 with Release 15–17
 - NTND09 with Release 18 and later
- slot 18: Either a Floppy Disk Unit (FDU) or a Multi Disk Unit (MDU) can be used in this slot, depending on the X11 release version.
 - NT8D68 FDU or NT8D69 MDU (Release 15–17)
 - NTND16 MDU (Release 18 and later)

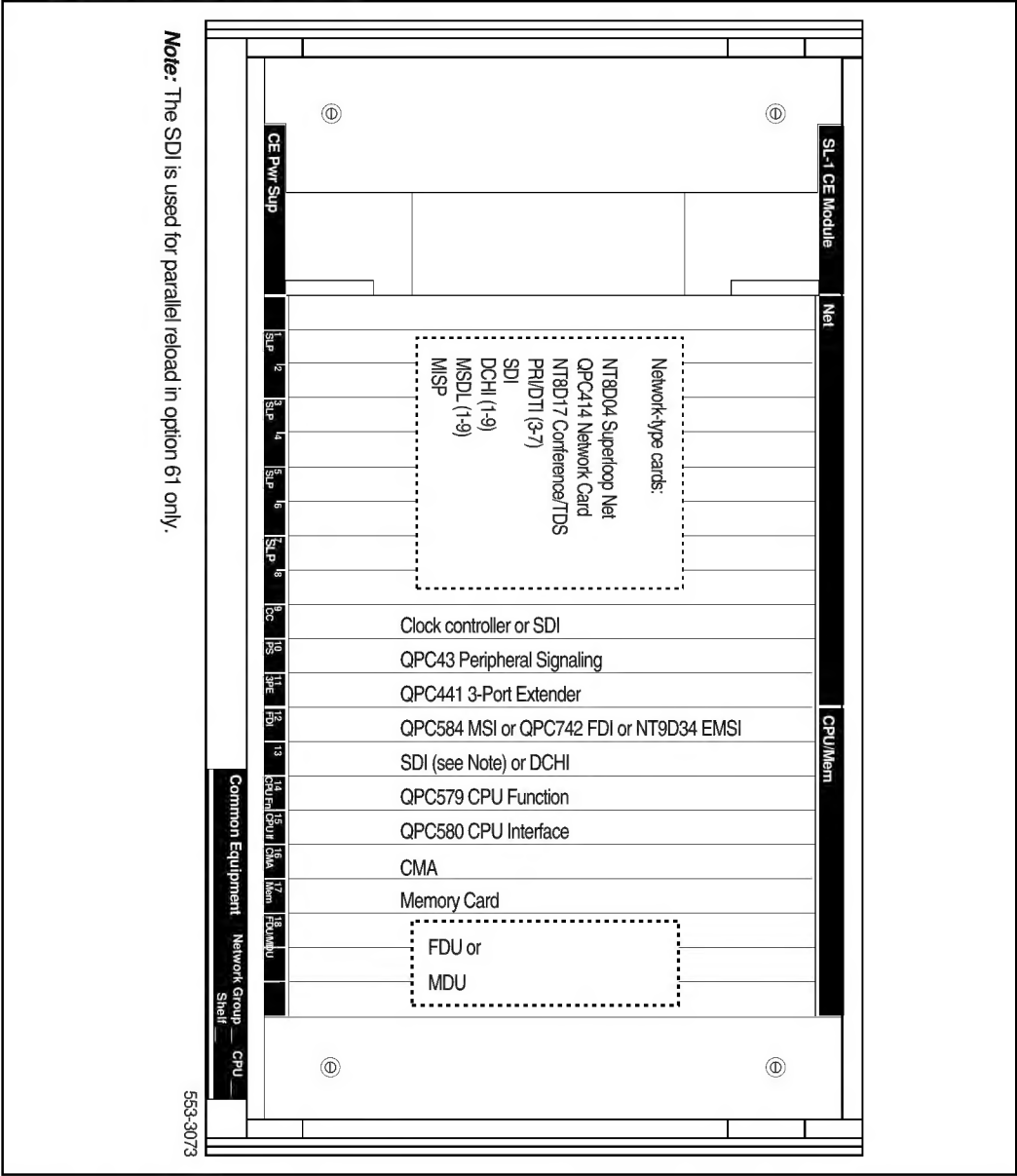
Note 1: Release 18 and later require an NTND08 ROM Card on the QPC579 CPU Function Card.

Note 2: NTND10 CMA Cards are compatible with QPC583 Memory Cards and can be mixed with QPC581 CMA Cards.

In addition:

- NT8D41 SDI paddle boards can occupy slots 7 and 8 on the rear of the backplane (slot 12 can be used for parallel reload only).
- Bus terminating units (BTUs) are installed between the following slots:
 - QPC477A9 between slots 2 and 3
 - QPC477A10 or B10 between slots 1 and 2
 - QPC477A22 between slots 12 and 13

Figure 4
NT6D39 CPU/Network Module



NT6D60 Core Module

This module is used in option 81. Two Core Modules are required.

The Core Module provides 11 card slots for the common control complex (CPU, memory, and mass storage functions) and 8 slots for the network interface cards listed below (see [Figure 5](#)):

In the section labeled IF:

- slots 0–3: PRI/DTI card (optional)
- slots 4–5: Reserved for future use

Note: The BTUs on the backplane interfere with a PRI/DTI card in slots 4 and 5.

- slot 6: QPC471 Clock Controller Card minimum vintage H
- slot 7: QPC441 3PE Card minimum vintage F

In the section labeled CORE:

- slots 8–10: NT6D65 Core to Network Interface (CNI) Card

Note: A CNI card must be installed in slot 8, which provides a backplane interface to the 3PE card in this module.

- slots 11–12: spare (can be used for CNI cards)
- slot 13: NT6D6003 Core Bus Terminator (CBT) Card
- slots 14–15: NT6D66 Call Processor Card
NT9D19 Call Processor Card
NT5D10 Call Processor Card
- slots 16–18: NT5D61 Input/Output Disk Unit with CD-ROM (IODU/C)
or NT5D20 IOP/CMDU

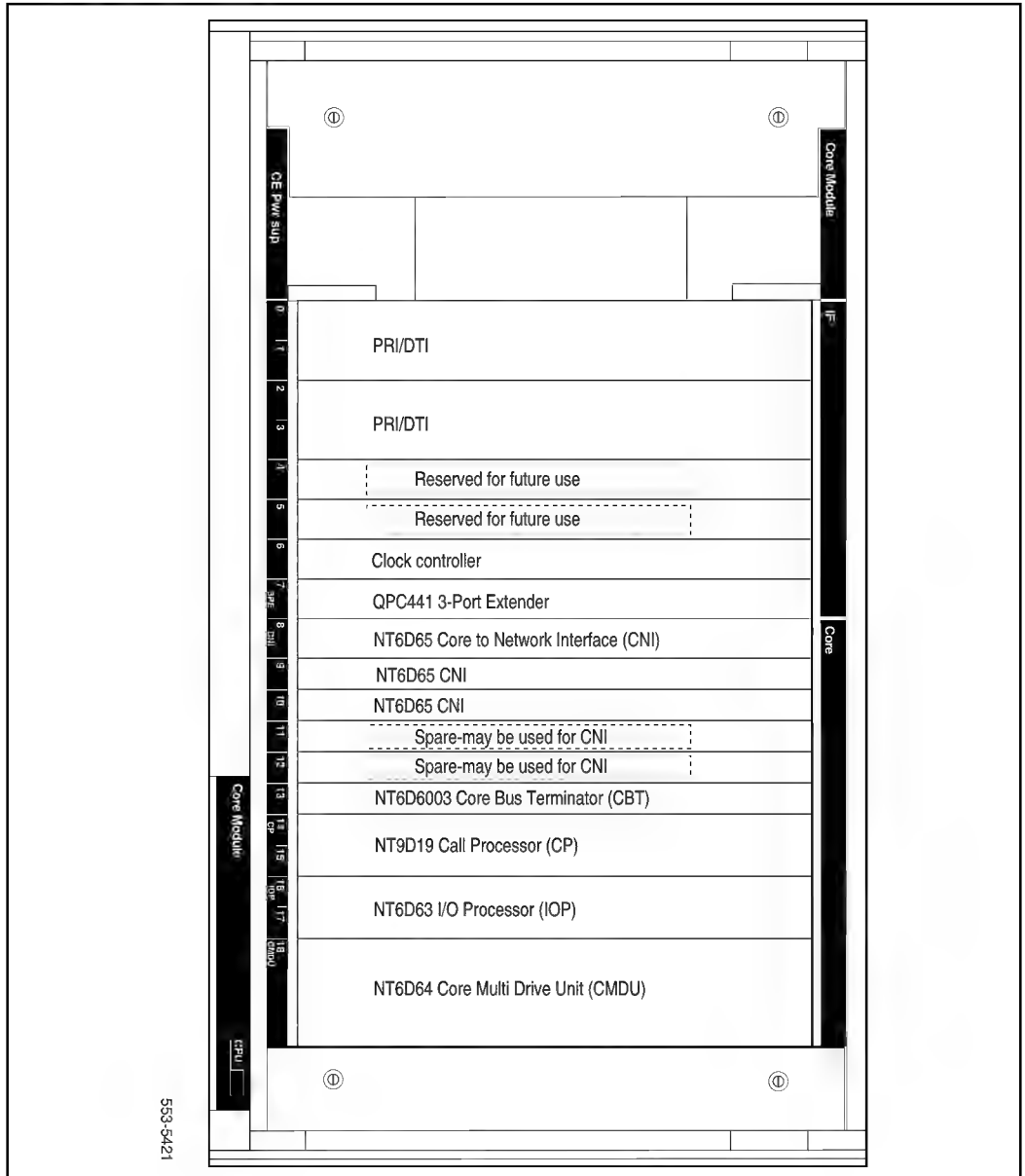
OR

- slots 16–17: NT6D63 I/O Processor (IOP) Card
- slot 18: NT6D64 Core Multi Drive Unit (CMDU)

In addition, BTUs are installed between the following slots:

- QPC477A9 between slots 4 and 5
- QPC477B10 between slots 5 and 6

Figure 5
NT6D60 Core Module



NT8D11 Common/Peripheral Equipment Module

One CE/PE Module is used in options 21A, 21, and 21E. This module houses CPU, network, and IPE cards.

The IPE cards in the module are supported by the backplane interface between the network/Digitone receiver (DTR) card and the memory/peripheral signaling card. Other network cards in the module are cabled to peripheral equipment controller cards in IPE and PE Modules. The module supports up to 6 superloops (that provide 28 network loops) or 12 regular network loops.

There are ten slots for the common equipment (CPU and network interface) cards and ten slots for IPE cards (see [Figure 6](#)):

In the section labeled CPU/MEM:

- slot 1: QPC742 FDI, minimum vintage F for option 21E
 (Release 18 and later)
 or
 NT9D34AA EMSI for option 21E (Release 18 and later)
- slot 2: QPC687 CPU Card with Release 15–17
 NTND01 ICM Card for option 21E (Release 18 and later)
- slot 3: NT8D19 Memory/Peripheral Signaling (MMPS) Card
 with Release 15–17
 NTND02 Misc/SDI/Peripheral Signaling (MSPS) Card
 with option 21E (Release 18 and later)

In the section labeled NET:

- slots 4–9: NT8D04 Superloop Network Card
NT8D17 Conference/TDS Card (usually slot 4)
QPC414 Network Card
Clock controller card (slots 4–7)
PRI/DTI card (slots 4–8)
SDI card
DCHI card (4–7)
MSDL card
MISP card
- slot 10: NT8D18 Network/DTR Card

In the section labeled IPE:

- slots 0–9: IPE cards

Note 1: Option 21E (Release 18) requires an NTND31 ROM Card on the NTND01 ICM Card.

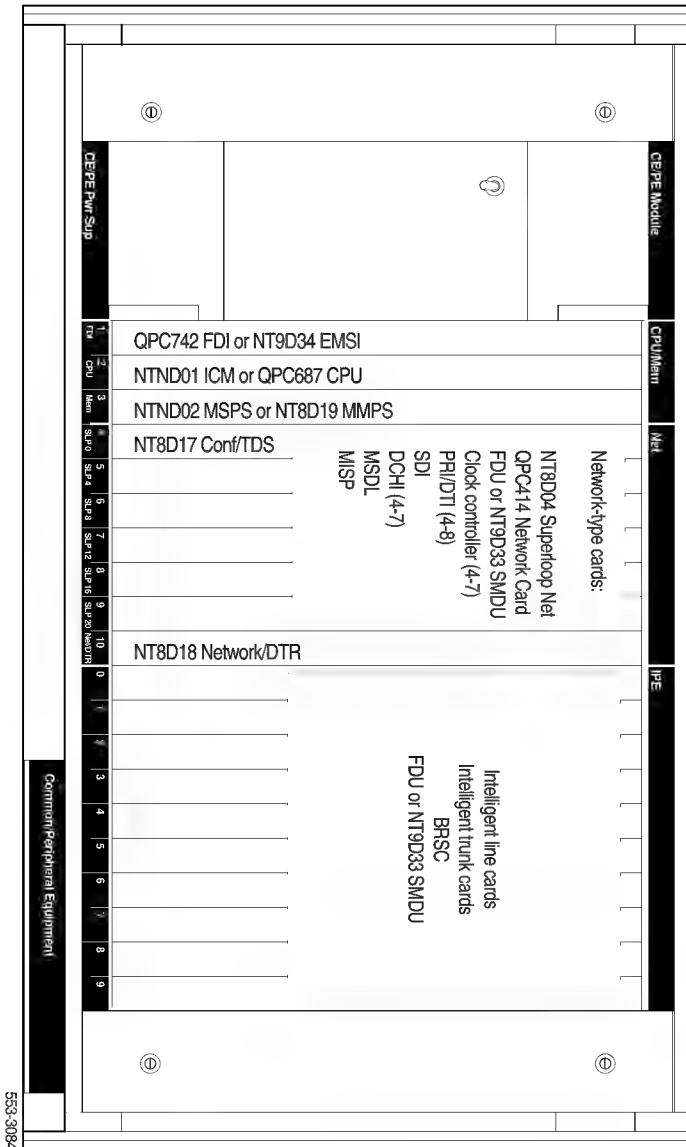
Note 2: The FDU (NT8D68 with Release 15–17, NTND15 with option 21E) can be installed in any two adjacent slots.

Note 3: The NT9D33 SMDU (in option 21E, compatible with Release 18 and later, required for Release 20b and later) can be installed in any two adjacent 1-inch slots, or any three (or rightmost two) adjacent 7/8-inch slots. It can be installed in any position previously occupied by an FDU.

Note 4: When the backplane is configured for 10 cables (NT8D11 vintages BC and EC), the NT7D16 Data Access Card (DAC) can be installed in any IPE slot. If the backplane is configured for seven cables (NT8D11 vintages AC and DC), you must install the DAC in slot 0 because only that slot is fully cabled for 24 pairs.

In options 21 and 21E, NT8D41 SDI paddle boards can occupy the three slots on the backplane of the CE/PE module. In option 21A, the NT7D15 System Monitor occupies one backplane slot and SDI paddle boards may occupy the other two.

Figure 6 NT8D11 CE/PE Module



NT8D13 Peripheral Equipment Module

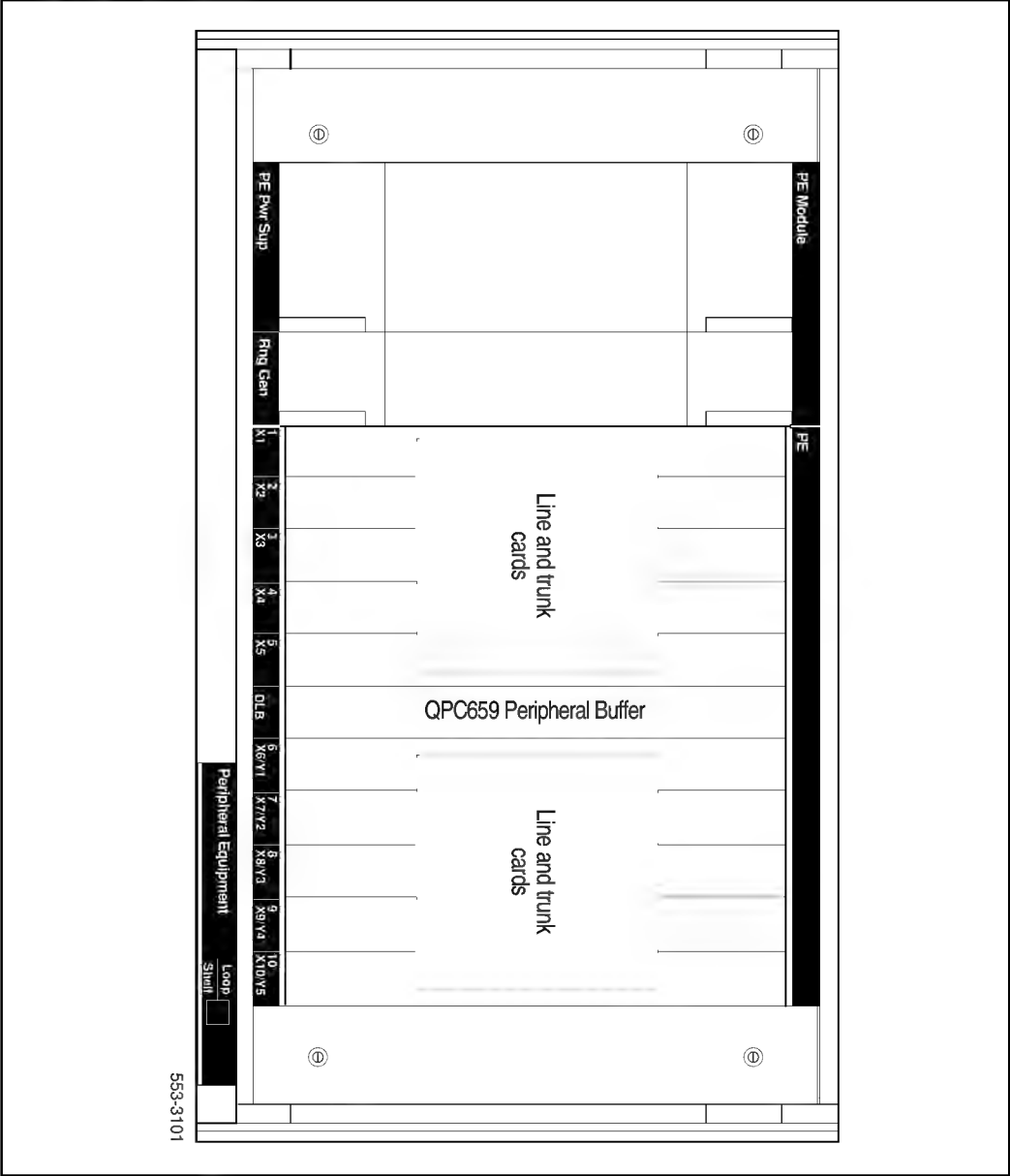
This module can be used with all system options (option 21A must be upgraded for compatibility).

The PE Module houses one QPC659 Dual Loop Peripheral Buffer Card and up to ten PE cards (such as line and trunk cards). The dual loop buffer card is cabled to a QPC414 Network Card.

Note: The PE Module does not support IPE cards. IPE cards are housed in NT8D11 CE/PE and NT8D37 IPE Modules.

The dual loop peripheral buffer card must be installed in the card slot labeled DLB (for dual loop buffer). The other slots can house any PE card (see [Figure 7](#)).

Figure 7
NT8D13 PE Module



NT8D34 CPU Module

The CPU Module is used in option 71. Two CPU Modules, side by side in the first or second tier, are required.

This module provides 17 card slots for the CPU cards listed below (see [Figure 8](#)):

- slots 1–2: Memory card
 - QPC583 with Release 15–17
 - NTND09 with Release 18 and later
- slot 3: CMA card
 - QPC581 with Release 15–17
 - NTND10 with Release 18 and later (can be used with Release 15–17)
- slot 4: QPC580 CPU Interface Card
- slot 5: QPC579 CPU Function Card
- slot 6: SDI card (for parallel reload only)
- slot 7: QPC584 MSI Card minimum vintage L (Release 18 and later) or NT9D34 EMSI Card
- slots 8–12: QPC215 Segmented Bus Extender (SBE) Card
- slot 13: SDI card (for parallel reload only)
- slot 14: Clock controller card
- slots 15–17: PRI/DTI card MDU
 - NT8D69 Release 15–17
 - NTND16 with Release 18 and later

Note 1: NTND10 CMA Cards are compatible with QPC583 Memory Cards and can be mixed with QPC581 CMA Cards.

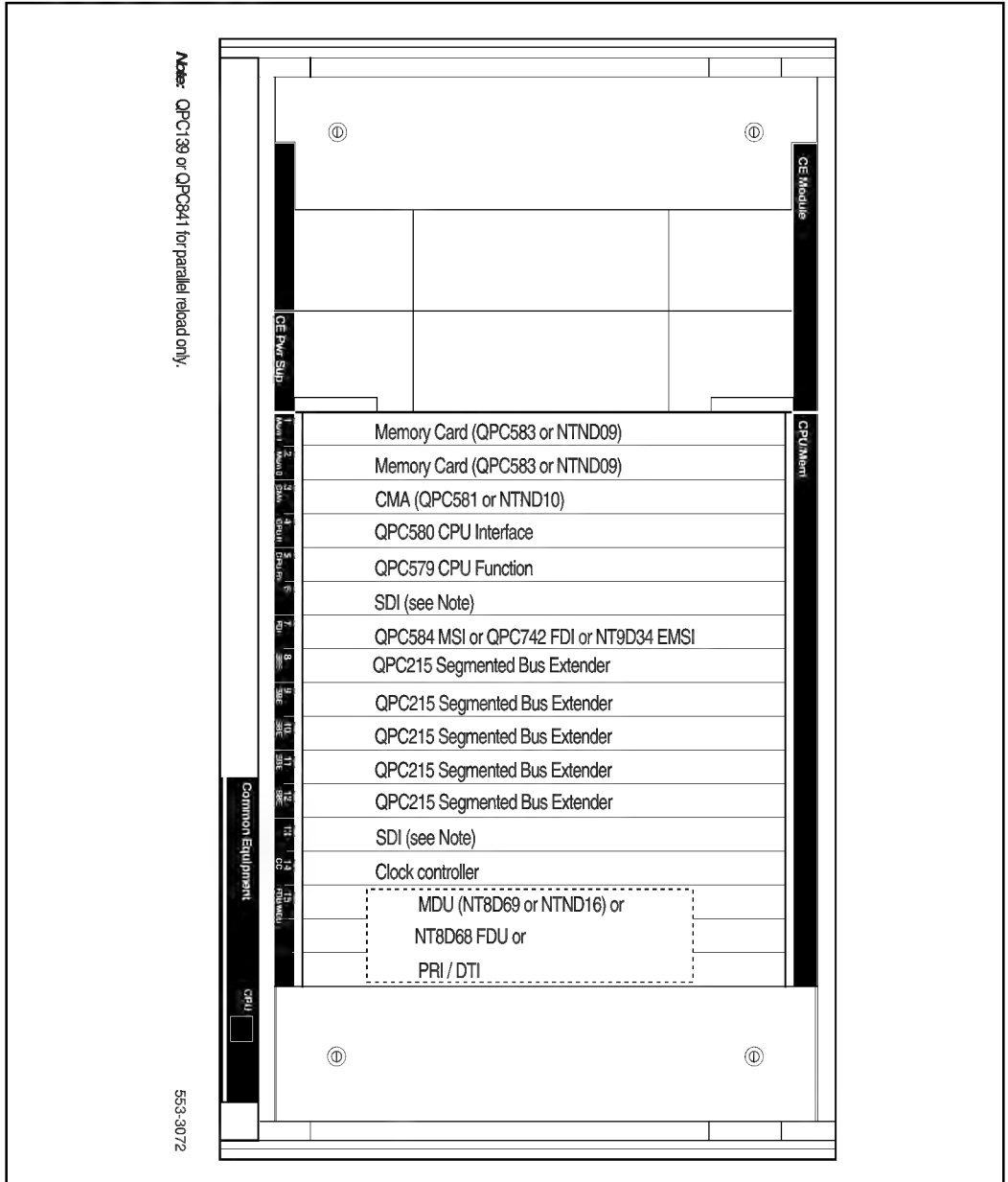
Note 2: Release 18 and later requires an NTND08 ROM Card on the QPC579 CPU Function Card.

Note 3: The NT8D68 FDU can be used with Release 15 only. If the FDU is equipped, use a QPC742 FDI Card in slot 7.

In addition, BTUs are installed between the following slots:

- QPC477A20 between slots 13 and 14 for CPU 0
- QPC477A21 between slots 13 and 14 for CPU 1

Figure 8
NT8D34 CPU Module



NT8D35 Network Module

This module is used in options 71, 81, and 81C. Two Network Modules are required to make a full network group of 32 loops. A maximum of ten Network Modules (five network groups) can be configured.

The Network Module houses up to four NT8D04 Superloop Network Cards, or eight QPC414 Network Cards, or a combination of the two, for a total of 16 network loops. The network cards are cabled to peripheral equipment controller cards in IPE and PE Modules. In a typical configuration, one conference/TDS card is configured in the module, leaving 14 voice/data loops available.

This module provides 15 card slots for the following network interface cards (see [Figure 9](#)):

- slot 1: QPC441 3PE Card
- slot 2: NT5D30AA Dual InterGroup Switch (DIGS) card or
 QPC412 InterGroup Switch (IGS) Card. If the NT5D30AA
 DIGS card is installed in slot 2, then no card should be
 installed in slot 3.
- slot 3: QPC412 InterGroup Switch (IGS) Card. If the NT5D30AA
 Dual InterGroup Switch (DIGS) card is installed in slot 2,
 then no card should be installed in slot 3.
- slot 4: QPC43 Peripheral Signaling Card
- slots 5–12: NT8D04 Superloop Network Card
 QPC414 Network Card
 NT8D17 Conference/TDS Card
 PRI/DTI card (slots 5–11 only)
 SDI-type card
 MSDL card
 MISP card
- slot 13: Clock Controller for option 81C
- slots 13–14: PRI/DTI card
 SDI-type card (slot 13 only)
- slot 15: not used

The Network Module can be used as a PRI/DTI expansion module. When it is used in this configuration, the Network Module can be used with any system option (option 21A must be upgraded for compatibility). [Figure 10](#) shows the card slot configuration when the Network Module is used for PRI/DTI expansion.

Figure 9
NT8D35 Network Module

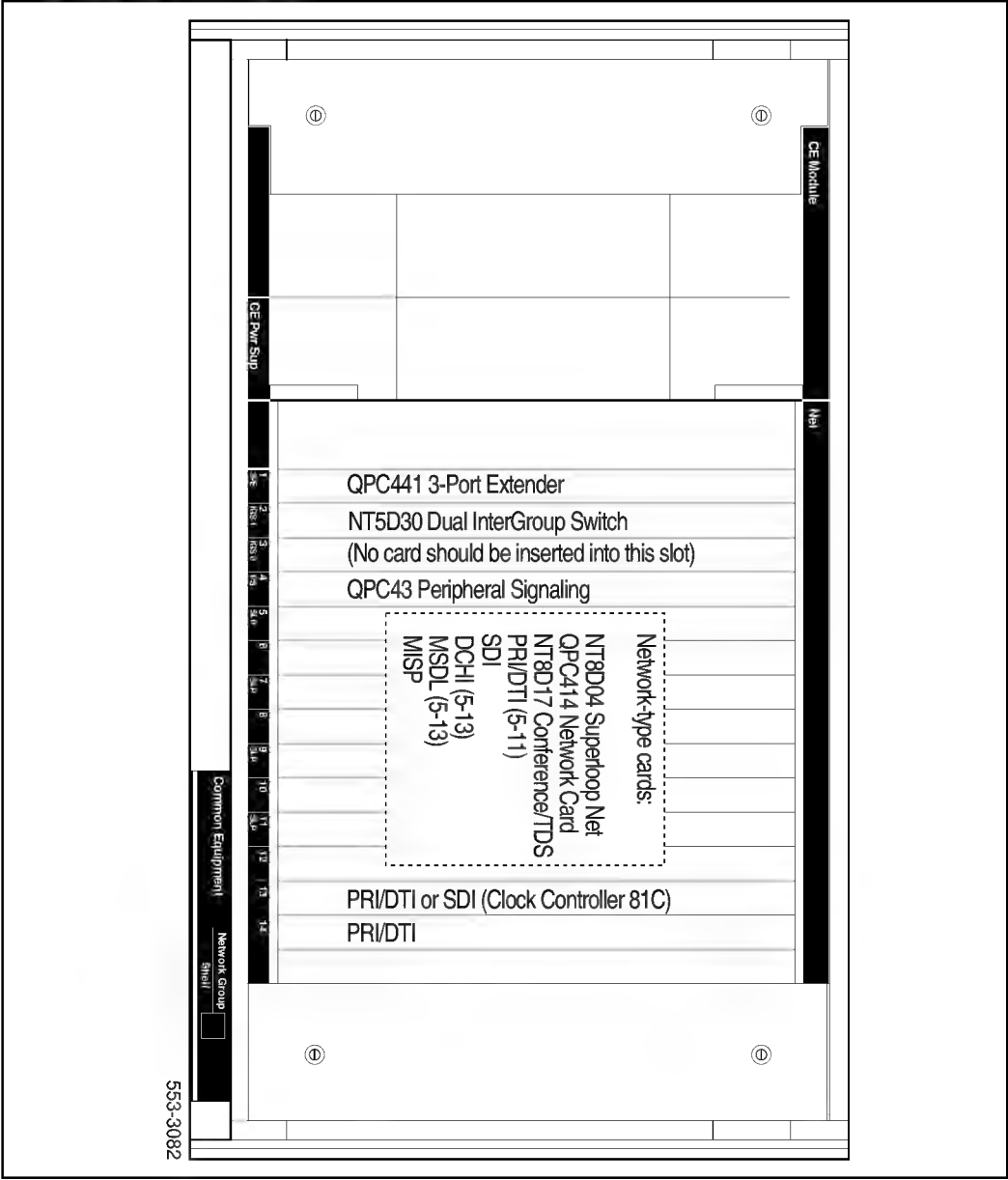
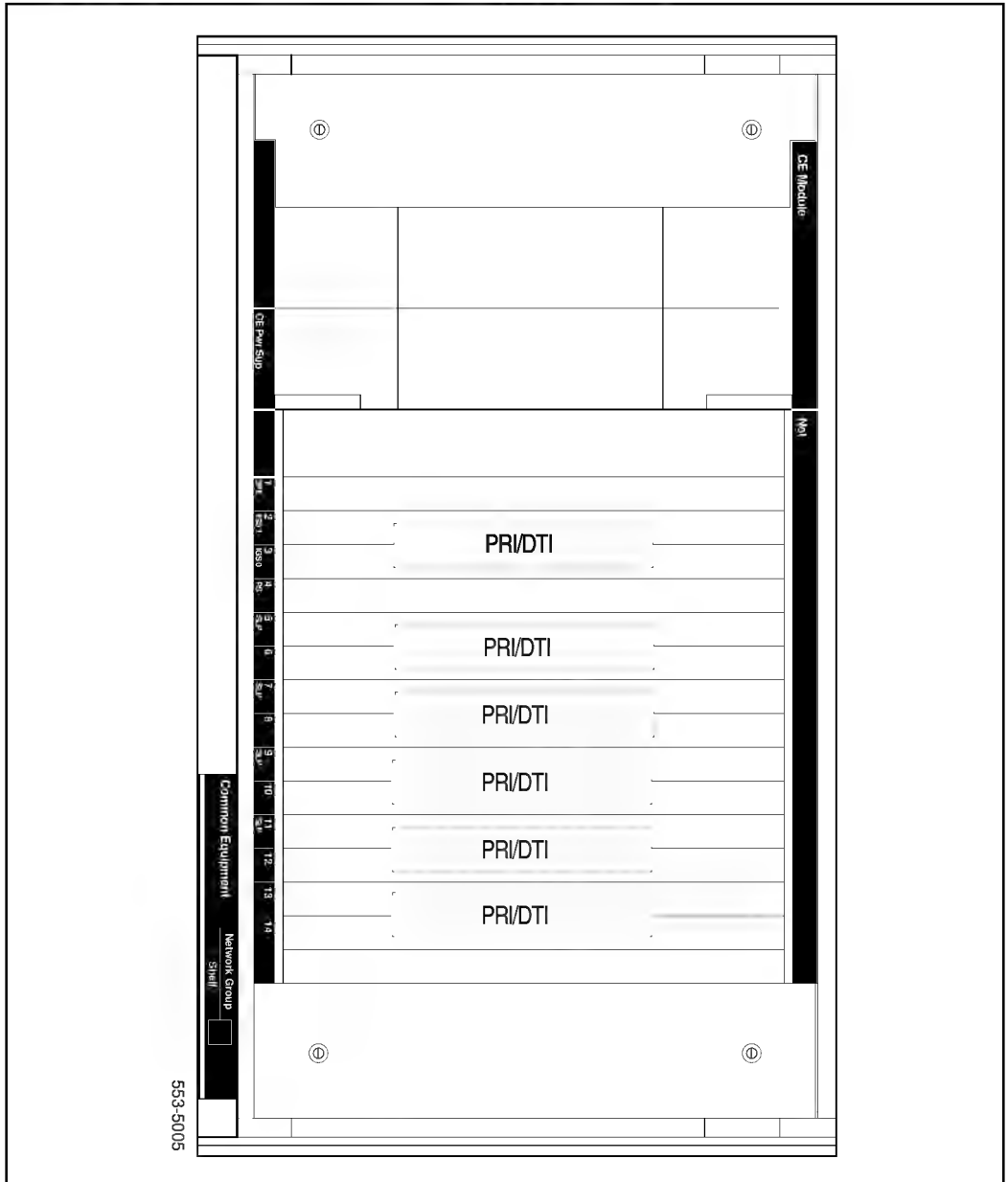


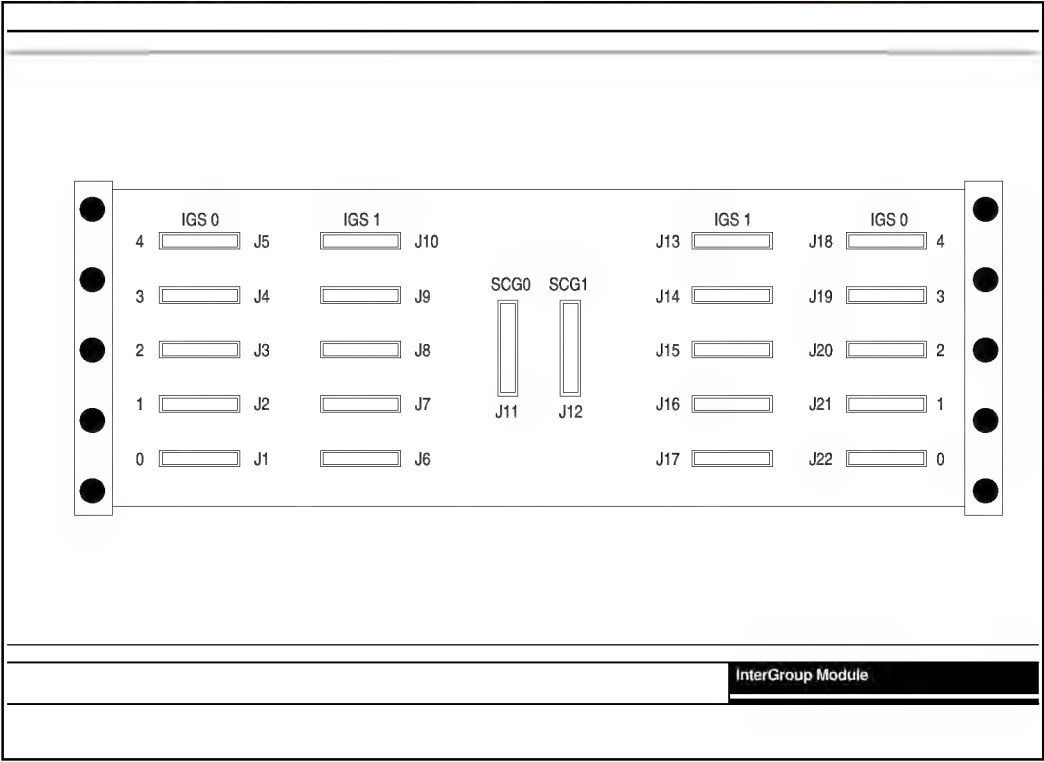
Figure 10
NT8D35 Network Module configured for PRI/DTI expansion



NT8D36 InterGroup Module

This module, used in options 71, 81, and 81C, houses the QPC417 Junctor Board. Clock Controller and InterGroup Switch or Dual Intergroup Switch cards are interconnected through the junctor board, which provides a path for switching traffic between network groups. [Figure 11](#) shows the connectors in the module.

Figure 11
NT8D36 InterGroup Module



NT8D37 Intelligent Peripheral Equipment Module

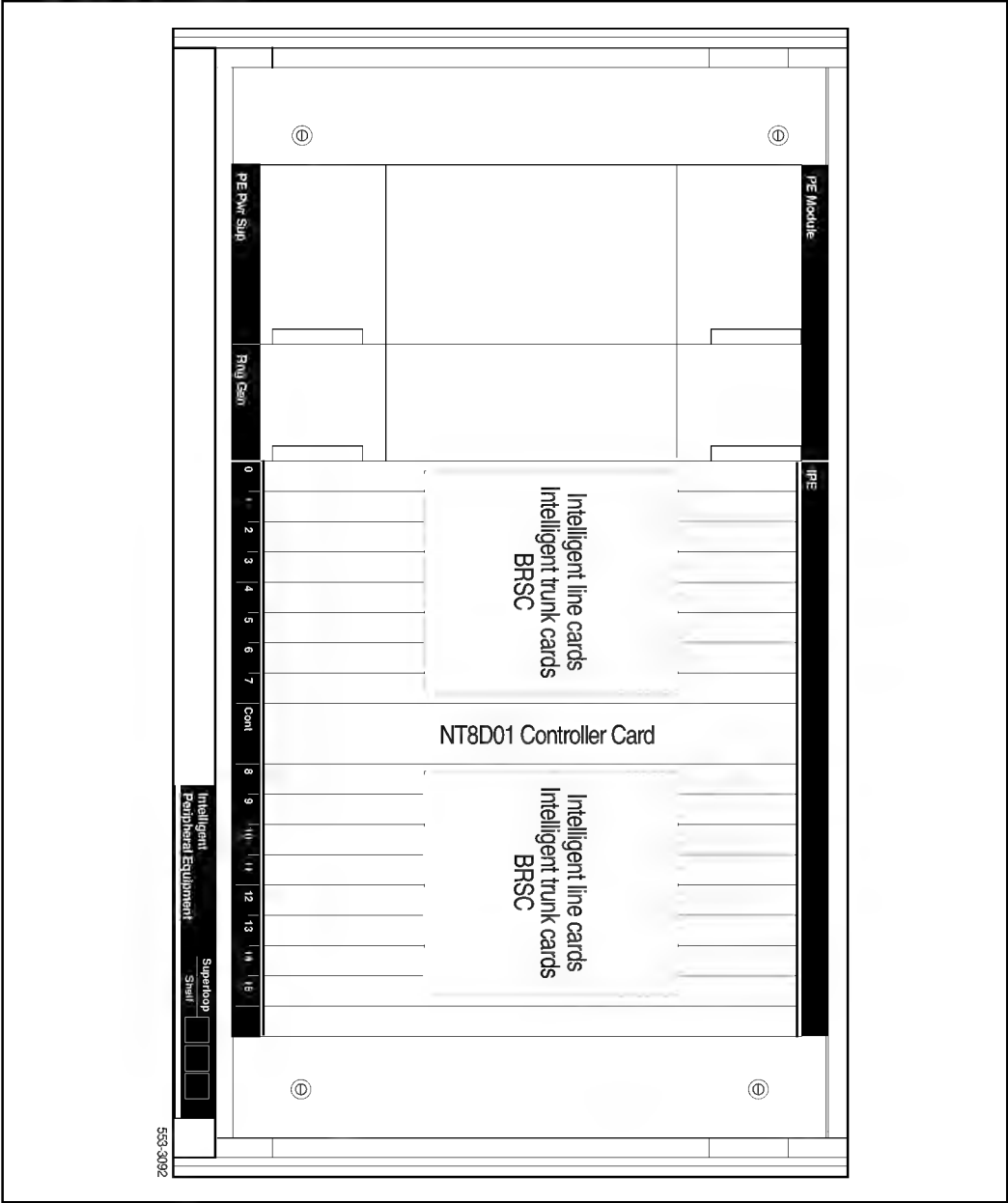
This module can be used in all system options (option 21A must be upgraded for compatibility).

The IPE Module houses one NT8D01 Controller Card and up to 16 IPE cards (such as line and trunk cards), supporting up to 512 terminal numbers (256 voice and 256 data). The controller card is cabled to the NT8D04 Superloop Network Card.

The controller card must be installed in the card slot labeled Cont (for controller). The other slots can house any IPE card (see [Figure 12](#)).

Note: When the backplane is configured for 16 cables (NT8D37 vintages BA and EC), the NT7D16 Data Access Card can be installed in any IPE slot. If the backplane is configured for 12 cables (NT8D37 vintages AA and DC), you must install the DAC in slots 0, 4, 8, or 12 because only those slots are fully cabled for 24 pairs.

Figure 12
NT8D37 IPE Module



NT8D47 Remote Peripheral Equipment Module

In conjunction with the NT8D13 PE Module, the RPE Module extends the network-to-peripheral equipment interconnection distance between local and remote sites. This module can be used with all options (option 21A must be upgraded for compatibility).

The RPE Module accommodates two network loops. The number of RPE Modules required per system depends on the number of connections required at the remote site.

At the local site, the RPE Module is equipped with QPC63 Local Carrier Buffer Cards. Although they are not related to RPE function, the RPE Module can also house PRI/DTI cards at the local site. At the remote site, the RPE Module is equipped with QPC65 Remote Peripheral Switch Cards.

This module provides 12 card slots for the following cards (see [Figure 13](#) for cards housed at the local end and [Figure 14](#) for cards housed at the remote end):

- slots 1/11–12: PRI/DTI card (local end only)
- slots 2 and 9: QPC62 1.5 Mbyte Converter Card
- slots 3 and 8: QPC66 2 Mbyte Converter Card
- slots 4 and 7: QPC99 Carrier Interface Card
- slots 5 and 6: QPC63 Local Carrier Buffer Card (local end)
QPC65 Remote Peripheral Switch Card (remote end)
- slot 10: QPC67 Carrier Maintenance Card

Figure 13
NT8D47 RPE Module—local site

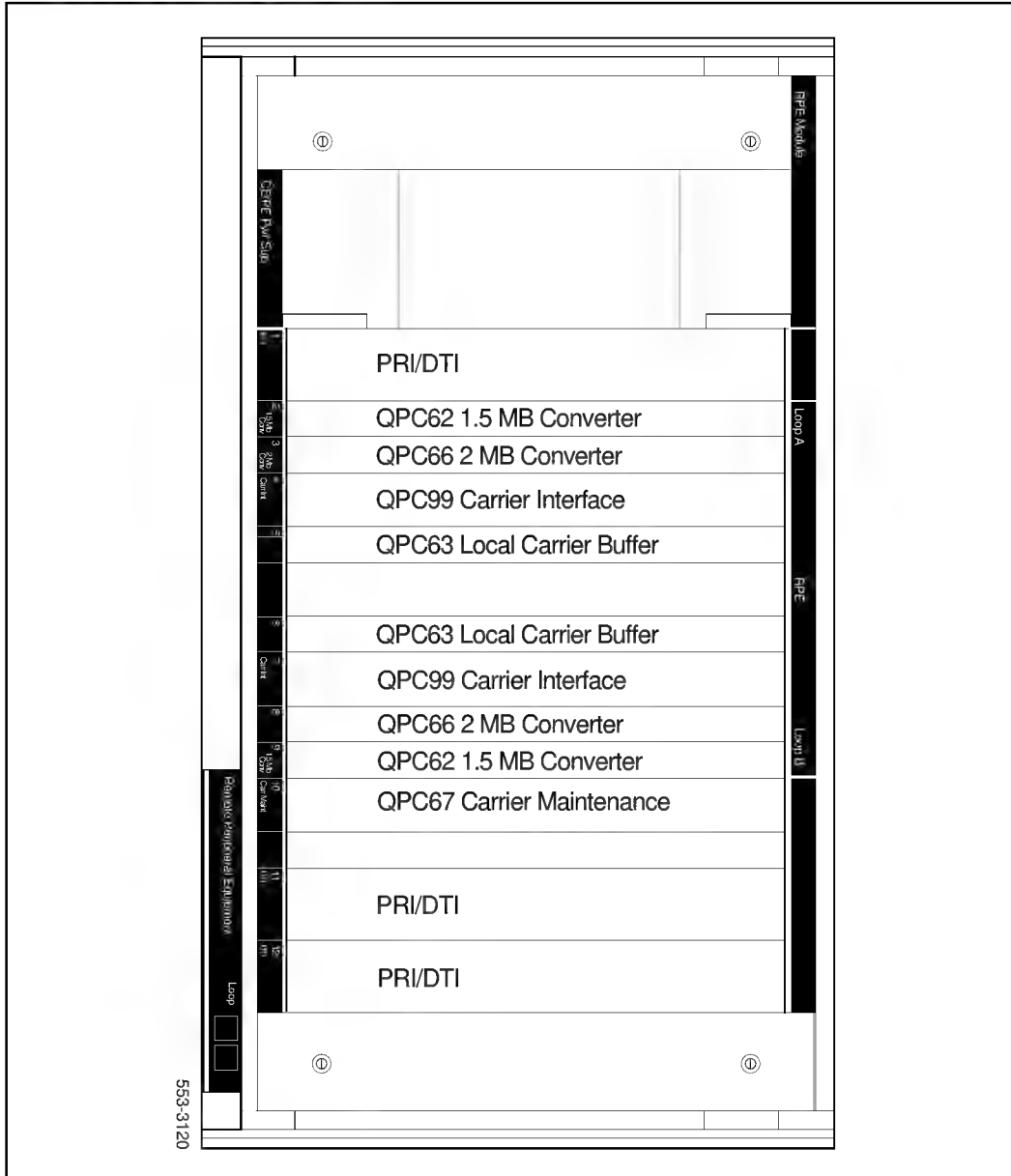
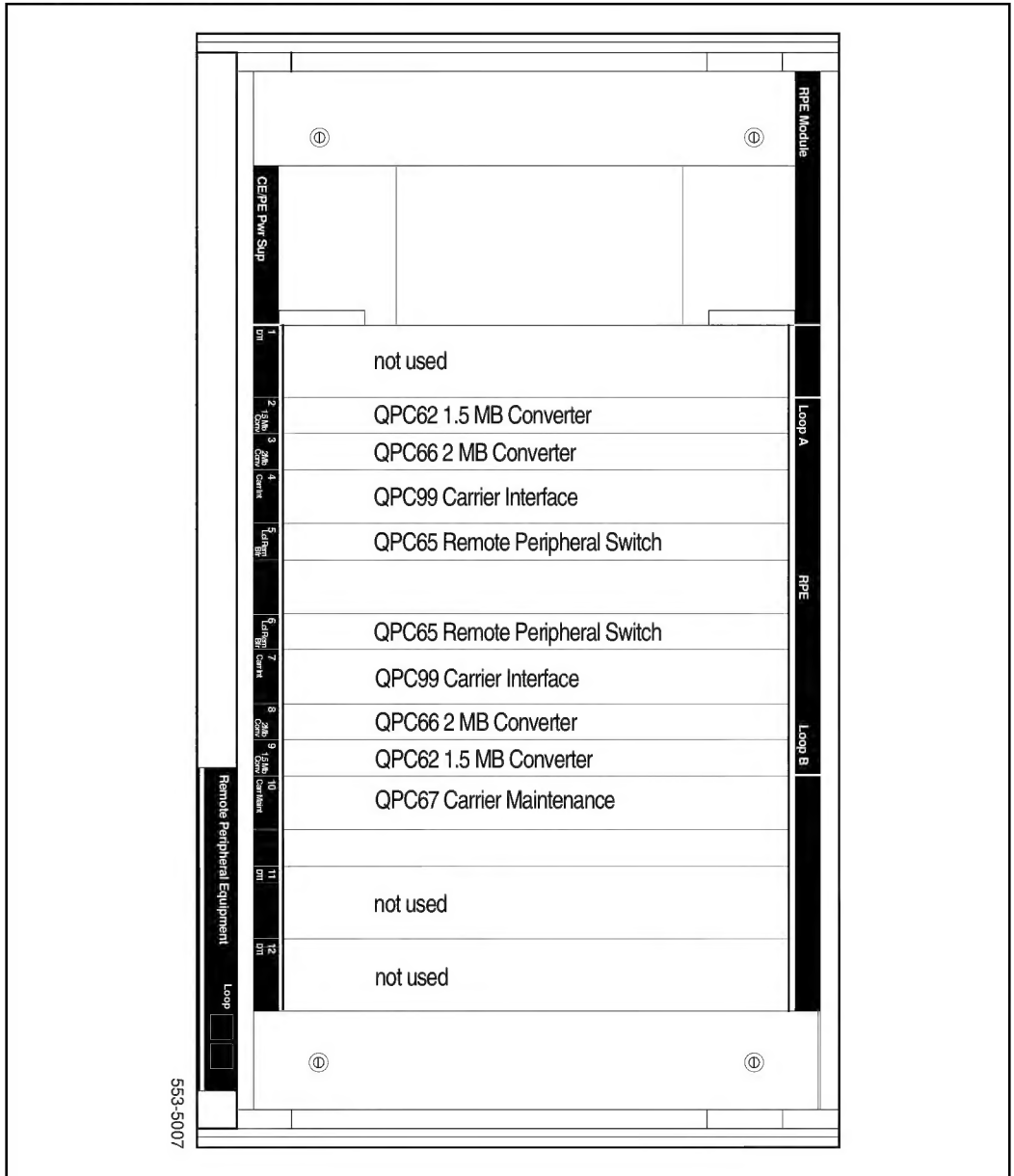


Figure 14
NT8D47 RPE Module—remote site



NT9D11 Core/Network Module

This module is used in options 51C and 61C with X11 release 19 or higher:

- Option 51C, a single-CPU, half-network group system, requires one Core/Network Module.
- Option 61C, a dual-CPU, full-network group system, requires two Core/Network Modules.

The Core/Network Module supports up to 16 network loops. There are 12 card slots for the network interface cards and 7 slots for the CPU, memory, and disk drive equipment listed below (see [Figure 15](#)):

In the section labeled NET:

- slots 0–7: NT8D04 Superloop Network Card
 NT8D17 Conference/Tone and Digit Switch (TDS) Card
 QPC414 Network Card
 Primary rate interface/digital trunk interface (PRI/DTI)
 card (slots 2–7 only)
 Serial data interface (SDI) card
 D-channel handler interface (DCHI) card (slots 0–7)
 Multi-purpose serial data link (MSDL) card
 Multi-purpose ISDN signaling processor (MISP) card

Note: The BTUs between slots 0 and 1 and between slots 1 and 2 interfere with a PRI/DTI card in either of those positions.

- slot 8: Spare
- slot 9: QPC471 Clock Controller Card (minimum vintage H)
- slot 10: QPC43 Peripheral Signaling Card (minimum vintage R)
- slot 11: QPC441 3-Port Extender (3PE) Card (minimum vintage F)

In the section labeled Core:

- slot 12: NT6D65 Core to Network Interface (CNI) Card
- slot 13: NT6003 Core Bus Terminator (CBT) Card
- slots 14 and 15: NT6D66 Call Processor Card
NT9D19 Call Processor Card (see note 1 below)
NT5D10 Call Processor Card
- slots 16-18: NT5D61 Input/Output Disk Unit (IODU/C) or
NT5D20 IOP/CMDU

OR

- slots 16 and 17: NT6D63 Input/Output Processor (IOP) Card
- slot 18: NT6D64 Core Multi Drive Unit (CMDU)

In addition:

- NT8D41 SDI paddle boards can occupy slots 7 and 8 on the rear of the backplane.
- Bus terminating units (BTUs) are installed between the following slots:
 - QPC477A9 between slots 0 and 1
 - QPC477B10 between slots 1 and 2

Note 1: Use the 48 MB (or higher) version of the NT9D19 Call Processor Card or any version of the NT5D10 Call Processor card, to run X11 Release 23 software on system options 51C or 61C.

Figure 15
NT9D11 Core/Network Module

